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ABSTRACT

TEACHER TRAINING FOR WORK IN INDIVIDUALLY PRESCRIBED INSTRUCTION (IPI) DEPENDS HEAVILY UPON AN INTENSIVE ORIENTATION TO THIS SPECIFIC SYSTEM AND TO THE THEORY AND RATIONALE UNDERLYING IT. IT CAN BE FULLY SUCCESSFUL ONLY IF IT INVOLVES VERY EXTENSIVE EXPERIENCE IN ACTUALLY WORKING UNDER THIS SYSTEM IN THE CLASSROOM. ALSO, EFFECTIVE OPERATION OF AN IPI SCHOOL SEEMS TO DEMAND WEEKLY OR BI-WEEKLY TEACHER PLANNING SESSIONS THAT HAVE AS THEIR MAJOR FUNCTIONS THE FURTHER TRAINING OF TEACHERS AND THE PLANNING OF NECESSARY ADAPTATIONS IN MATERIALS, PLANS, AND PROCEDURES. IT IS ASSUMED THAT JUST AS THE IPI PROGRAM IS SUBJECT TO CONTINUING STUDY AND IMPROVEMENT, SO WILL THE PROCEDURES FOR TEACHER PREPARATION BE THE TARGET OF CONTINUOUS UPGRADING. (AUTHOR)

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THE PREPARATION OF TEACHERS FOR INDIVIDUALLY PRESCRIBED INSTRUCTION

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Learning Research and Development Center
University of Pittsburgh

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INDIVIDUALLY PRESCRIBED INSTRUCTION: OUTLINE

GOALS[1]	PLAN
Basic goals which the IPI procedure is designed to achieve.	A specification of all the things that must be planned if the program goals are to be achieved. Each item here must be specifically related to at least one program objective.
I. Every pupil makes regular progress towards mastery of instructional content.	INSTRUCTIONAL OBJECTIVES that: (a) clearly specify skill and content to be mastered. (Goal I) (b) are sequenced in a prerequisite order. (Goal I) (c) involve, individually, relatively small increments in learning. (Goal I) (d) are stated in terms of observable pupil behavior. (Goal III) (e) cover all desired abilities.
II. Every pupil proceeds to mastery of instructional content at an optimal rate.	A TESTING PROGRAM that: (a) provides information for proper placement in the instructional continua. (Goal I, II (b) aids in the diagnosis of specific pupil needs. (Goal I) (c) provides for frequent assessment of mastery. (Goal I) (d) tests pupil on objectives and units when he is ready. (Goal II) (e) facilitates the planning of effective individualized programs. (Goal II) (f) provides information that has real meaning to the student. (Goal IV) PRESCRIPTION WRITING PROCEDURES that: (a) are based upon valid and meaningful diagnoses. (Goal I) (b) start the pupil at the proper point in the instructional continua. (Goal I) (c) specify learning experiences suited to the pupil's ability and other personal qualities (Goal I) (d) are suited to the pupil's rate of learning. (Goal II) (e) provide guidance to the pupil so that he can secure proper materials and proceed. (Goal IV) (f) provide for adjustment as pupil proceeds.
III. Every pupil is engaged in the learning process through active involvement.	INSTRUCTIONAL MATERIALS AND DEVICES that: (a) are referenced to a specific objective. (Goal I) (b) enable the student to achieve mastery. (Goal I) (c) permit a maximum of independent study

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OPERATION

A specification of how each item in the plan should look when the program is in actual operation. Each item here is directly related to a specific item in the plan. Each item here should serve as a basis for the formative evaluation of the operation to the program.

ASSESSMENT

Suggested methods for assessing the degree of achievement of each of the goals that IPI is designed to achieve.

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INSTRUCTIONAL OBJECTIVES that:
(a) can be used by lesson writers, test developers, and teachers without ambiguity.
(b) are in prerequisite order as evidenced by pupil mastery and progression.
(c) permit lesson writers to develop sequences of lessons that have no missing steps nor overlapping steps and with which pupils can make progress.
(d) are such that persons can agree as to what the pupil is to be taught and on what he is to be tested.
(e) are inclusive enough so that no important gaps in abilities taught are discovered.

GOAL I (Methods of Assessment)
(a) Weekly or monthly study of CET's and unit tests passed by each pupil to determine if continuing progress is being made. (Graph)
(b) Comparison of September Placement test results with end-of-year results.
(c) Determination of number of units completed by each student in a year.
(d) Measures of gains on standardized test scores.

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THE TESTING PROGRAM:
(a) is used to place pupils at correct points in the instructional continua.
(b) provides valid diagnosis of pupil needs.
(c) provides a valid assessment of mastery of objectives and of units.
(d) is administered so that the pupil is taking CET's and unit tests at proper times.
(e) provides data that are found useful by the teachers for developing valid prescriptions.
(f) provides data that are meaningful to the student.

GOAL II (Methods of Assessment)
(a) Description of variability in total number of units mastered by students at a given grade level at the end of each school year.
(b) Description of variability among students in a given grade in terms of their rates of learning as measured by (1) days spent in given units, (2) (100 pre-test score) /days in unit, (plus other rate measures).
(c) Evidence of unusually fast rates.

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INSTRUCTIONAL PRESCRIPTIONS:
(a) are based upon proper use of test results and specified prescription writing procedures.
(b) provide learning experiences that are a challenge but permit regular progress.
(c) vary from pupil to pupil depending upon individual differences.
(d) permit pupil to proceed at his best rate.
(e) are interpreted and used correctly by the pupil.
(f) are modified as required.

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THE INSTRUCTIONAL MATERIALS AND DEVICES:
(a) are easily identified with the proper objective.
(b) have demonstrated instructional effectiveness.
(c) are used by pupils largely in individual

GOAL III (Methods of Assessment)
(a) Observation of pupil attention to lesson work in the classroom.
(b) Inspection of lesson materials to determine the extent to which active responses by the pupil are required.

and individual progress. (Goal II)
(d) permit packaging into individualized instructional sequences. (Goal I, II)
(e) require active responses on the part of the pupil. (Goal III)
(f) are primarily self-instructional. (Goal IV)
(g) are regularly revised and improved on the basis of performance data. (Goal VI)

IV. The pupil is involved in learning activities that are wholly or partially self-directed and self-selected.

TEACHER CLASSROOM ACTIVITIES that:
(a) provide the pupil with help when he needs it. (Goal I, II)
(b) provides individual help on individual problems. (Goal I, II)
(c) permit the teacher to spend considerable time in diagnosing needs of individual pupils and in preparing prescriptions. (Goal I, II)
(d) reinforce the pupil's learning and attention. (Goal I)
(e) give the student considerable freedom in determining when and how he works. (Goal IV)
(f) facilitate progress on an individual basis. (Goal II)

V. The pupil plays a major role in evaluating the quality, extent, and rapidity of his progress towards mastery of successive areas of the learning continuum.

PUPIL CLASSROOM ACTIVITIES that:
(a) Allow each pupil to work independently and at his own pace to master lesson content. (Goal II, IV)
(b) have the pupil actively involved in learning activities. (Goal III)
(c) permit pupils to secure materials and other aids to instruction when they need them. (Goal II, IV)
(d) permit pupils to obtain help from other pupils. (Goal II)

CLASSROOM MANAGEMENT PROCEDURES that:
(a) use teacher aides to score papers and tests and provide quick feedback on results. (Goal I, II)
(b) permit pupils to score some of his papers. (Goal V)
(c) provide for the pupil's procuring his own instructional materials. (Goal IV)
(d) allow the pupil to decide when he has completed a lesson and is ready to have it scored. (Goal IV)

VI. Different pupils work with different learning materials and techniques of instruction adapted to individual needs and learning styles.

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[1]Note: The overall goal of the IPI project is to develop an educational program which is maximally adapt system can provide every student with an educational experience which is of maximum value in both a which will enhance the probabilities that he will continue to be a learner throughout his life. The ba development efforts currently underway. As such they constitute the goals for current plans and devel some of these goals may be modified and additional goals added.

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independent study.
(d) are used by pupils in individualized packages.
(e) keep the pupil actively involved.
(f) require a minimum of direct teacher help to pupils.
(g) are shown to teach more effectively as they are revised.

THE TEACHER CLASSROOM ACTIVITIES are such that:
(a) there is little delay in the pupil's getting help when he needs it.
(b) teacher assistance to pupils is largely on an individual basis.
(c) the teacher will spend some class time in examining pupil work and in developing prescriptions.
(d) positive reinforcement of desirable behavior is employed.
(e) teachers give the students considerable freedom.
(f) little time is spent on lectures (etc.) to the group, and individual or small group tutoring is employed.

PUPIL CLASSROOM ACTIVITIES are such that:
(a) pupils work largely on an individual and independent basis.
(b) pupils are studying with a minimum of wasted time.
(c) pupils secure needed materials in an efficient manner.
(d) pupils help each other on occasion.

CLASSROOM MANAGEMENT PROCEDURES are such that:
(a) teacher aides score papers and record results in an efficient manner.
(b) pupils score some work pages.
(c) pupils procure own lesson materials.
(d) pupils decide when to have lessons scored.

GOAL IV (Methods of Assessment)
(a) Observation of pupils in the classroom.
(b) Rating of pupils by teachers.
(c) Interviews with pupils.

GOAL V (Methods of Assessment)
(a) Data on extent to which pupils score own lessons, CET's, unit tests.
(b) Data on extent to which pupils write own prescriptions.
(c) Examination of the validity of pupil-prepared instructional prescriptions.

GOAL VI (Methods of Assessment)
(a) Analysis of prescriptions.
(b) Data on variations in lessons worked by pupils in same unit.

...s maximally adapti to the requirements of the individual learner. It is based on the assumption that such an individualized ...um value in both a ...alitative and quantitative sense and can give the student the favorable attitudes and the abilities ...t his life. The bas goals listed here represent statements of the qualities that the program should exhibit as a result of ...nt plans and develo ment activities. It is likely that as the project staff learns more about the individualization process

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As materials and procedures for increasing the effectiveness of education are developed, the problem of preparing teachers to employ these new developments becomes one of critical importance. New methods and materials can affect the education of students only to the extent that they are implemented in the classroom, and this implementation depends ultimately upon the performance of the teacher. As a consequence, if any new program is to have a chance of being successful, a prerequisite to putting it into operation must be the careful preparation of teachers to carry out the activities involved. This is particularly true of programs for individualizing instruction which demand rather radical departures from typical classroom procedures, such as is the case with Individually Prescribed Instruction.

Individually Prescribed Instruction (IPI)[1] is a procedure for individualizing instruction in math, reading, and science in grades K through 6 that has been developed at the Learning Research and Development Center at the University of Pittsburgh. The individualization involved, which is largely in terms of the rate at which pupils progress, is based on (1) extensive sequences of behavioral objectives in each subject, (2) self-instructional

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[1] C. M. Lindvall and John O. Bolvin, "Programed Instruction in the Schools: An Application of Programing Principles in Individually Prescribed Instruction," Programed Instruction, Sixty-Sixth Yearbook of the National Society for the Study of Education, Part II (Chicago: University of Chicago Press, 1967), p. 217.

materials designed to teach each objective, (3) a special testing program designed to place each pupil at the proper point in each sequence and to monitor his progress, (4) procedures for developing individualized lessons or prescriptions for each student, and (5) procedures for managing the school and the classroom in such a way as to facilitate the use of the foregoing. As may be surmised from this, the role of the teacher in IPI is quite different from what it is in a more conventional classroom. The IPI teacher is not a planner of group activities, not a lecturer or purveyor of information. Instead he is a diagnostician of individual students needs, a planner of individualized learning experiences, a tutor, and a counselor. This new teacher role demands a special type of preparation and it is this that we wish to explore in this paper.

The preparation of teachers for work in IPI classrooms may be dealt with in terms of three phases:

1. Background preparation in college teacher education programs.
2. Special training prior to the implementation of IPI.
3. Continuing in-service study as the program is being used.

Background Preparation

Little work has been done by those who have developed Individually Prescribed Instruction in terms of defining or testing the type of pre-service preparation which would best fit a teacher for work in an IPI school. Dr. Lauren Resnick, of the LRDC staff, has however, done some work on the tryout of a course designed to equip teachers with the skills needed for individualization. Her Teacher Training Laboratory provides an opportunity for teacher-trainees to develop diagnostic skills, to establish a repertoire of varied teaching techniques, and to become skillful in analyzing pupil classroom behavior in order to be able to make on-the-spot adjustments to his needs. Since our own special institutes designed to train teachers for the implementation of IPI in their schools have placed an emphasis on the ability to define specific

instructional objectives, to develop tests, to use test results for individual diagnosis, and to develop materials and lesson plans suited to the needs of the individual learner, our general recommendation is that good IPI teachers should have had work in these areas as a part of their teacher training programs.

Special Training for Implementation of IPI

Basic to the work on Individually Prescribed Instruction has been the assumption or hypothesis that the implementation of individualization in the classroom requires (1) teachers who are sensitive to individual differences and who have the skills essential for individual instruction and (2) a system and materials that provide the teacher with the help and guidance he needs to provide individualization. Changing teacher classroom behavior is not a simple task and demands attention to both of the above elements. It is obvious that individualization is not achieved merely by making teachers aware of the fact of individual differences and then urging them to provide for such differences. Teacher trainees have been subjected to this treatment for years and nothing has resulted from it. But perhaps the most telling evidence regarding the ineffectiveness of this approach is that the very persons who have been telling the trainees this (namely, you and me) have made no provision for individualizing their own classes. Achieving individualized instruction demands not only that we have teachers who have the required outlook and skills but also that classroom and school procedures be restructured in such a way that individualization is greatly facilitated if not demanded.

Our experience with IPI suggests that preparation for individualized instruction must be largely preparation for a specific system. General background preparation is important but it must be supplemented by training for involvement with a specific program. We have found it essential to provide the prospective IPI teacher with approximately four to six weeks of full-time training in summer workshops. This has involved spending one-half of each day working first as an observer, then a teacher-aide, and then

a teacher in summer school classes for elementary school students working under Individually Prescribed Instruction and spending the other half-day in classes and seminars dealing with the theory and techniques of the procedure.

The classroom practicum probably needs little explanation. These teachers are preparing for participation in a carefully structured educational system involving radically different procedures, new instructional materials, a large battery of tests, an extensive record system, and new patterns of classroom behavior. The best way to master all of this is actual involvement in it under the guidance and supervision of teachers with experience. As is true in the case of most teacher training programs, our trainees report that this practicum is the most useful part of the workshop.

However, it is essential that these prospective IPI teachers learn much more than the mechanics of the system. The procedure in operation is far from mechanical, and the teacher must be equipped with an understanding of the theory and rationale which will enable him to make the frequent adaptations and adjustments that are required. To help teachers acquire this the class and seminar sessions of the workshops deal with a number of background topics.

A first topic is the basic concept of individual differences among students in any given classroom group. This can involve an enumeration of the many ways in which pupils differ and some discussion of which of these differences can form the basis for feasible and meaningful adjustments in instruction. Here it becomes obvious that important differences of this type are those in present level of achievement and in the rate at which any given pupil can progress. That is, these latter differences have rather direct implications for instruction in that they indicate where a pupil should start and something about how fast he can be expected to proceed. Here it is useful to present evidence in the form of data for actual pupils. It is particularly meaningful if the data can be those for summer school pupils with whom the workshop participants are having firsthand contact. An example of data that can be used in this way is found in Table 1. (Page 11

in handout.) These records for individual pupils are based on placement test data obtained at the beginning of the year and on the number of unit tests that the pupil passed during two months of instruction. Data of this type can be particularly meaningful in terms of evidence concerning pupil differences and their specific implications for individualized study programs because of the fact that they are "criterion-referenced" measures. That is, these are not records of differences in percentile ranks, grade placement, or other "norm-referenced" scores that are essentially impossible to translate into terms of just what the pupil does and does not know. These are records that tell us, for example, that at the beginning of the year the pupil showed mastery of units 1 through 13 but not of any units beyond this. Such records tell us that a given pupil is at this point in the continuum and is now ready to start work here. They make quite apparent the inappropriateness of having an entire class study the same unit. The data also serve to document the point that pupils should be given the opportunity to move at individual paces. These and other actual data on pupil differences are most useful in developing meaningful concepts of individual differences.

Another important topic for the workshops has been that of defining and sequencing specific instructional objectives. IPI teachers will be working largely with sequences of objectives that have already been developed for the program, but if these are to be used intelligently, it is essential that the teacher have an understanding of what is involved in their development. Here we have the usual difficult task of getting the participants to actually state objectives in terms of behaviors. Since suggestions as to how to achieve this are covered in a variety of sources,[2, 3]

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[2]Robert Mager, Preparing Instructional Objectives (Palo Alto, California: Fearon Publishers, 1962).

[3]C. M. Lindvall, Measuring Pupil Achievement and Aptitude (New York: Harcourt Brace and World, 1967).

our approach need not be expanded here. Developing sequence is equally challenging. Our practice here is to give the trainees the terminal goal for some simple unit of instruction and then have them work backward from this by defining the capability immediately prerequisite to the terminal objective, then the capability immediately prerequisite to that one, and so on. This seems to be particularly useful in developing not only the concept of "instructional sequence" but also the concept of "level of mastery."

Work on the sequences of objectives is followed up by experience in writing criterion-referenced test items and tests (perhaps based on the trainees own sequence of objectives) and by some effort to produce lesson materials designed to teach each specific objective. The latter exercise is useful both because it gives the trainee some understanding of what is involved in directing instruction toward specifically defined goals and also because actual participation in IPI teaching occasionally requires the local development of materials designed to meet the learning needs of an individual child. Emphasis is also given here to the need for identifying a variety of alternate routes that students may follow in achieving mastery of an objective.

All of the foregoing class activities for the trainees are designed to help them have a real understanding of and appreciation for the roles of individual differences, behavioral objectives, learning sequences, diagnostic tests, and criterion-referenced tests and lesson materials in the development and operation of Individually Prescribed Instruction. Their command of all of the specific IPI materials, procedures, and lesson content is enhanced by having them actually take placement tests, score them, place themselves, take unit pretests, develop a prescription, and then actually work with lesson materials. This latter experience is provided early in the workshop so as to give the participants this training before they assume the role of a teacher aide in the IPI classroom.

Another essential aspect of the training centers on the informal seminars in which the trainees have the opportunity to raise questions and discuss problems that they encounter or observe

during the practicum. These seminars frequently involve the experienced teachers with whom they are working in the classroom. They also have involved the principal, supervisors, and IPI curriculum and program developers. Certain seminars center on special topics concerning teacher practices in the classroom: the use of non-test data in prescription writing, tutoring techniques, the use of positive reinforcement, the promotion of self-evaluation and self-direction among students, and general classroom management problems.

In summary, the pre-implementation workshops for preparing teachers to introduce Individually Prescribed Instruction into their school is designed to (1) familiarize the trainee with all of the details of IPI procedures and materials, (2) give him actual classroom experience in the use of these, and (3) provide him with an understanding of the principles upon which the procedure is built so that he can apply it with intelligence and imagination. Approximately 120 teachers have now been given this type of preparation and their classroom performance is now being studied in order to evaluate the effectiveness of their training. Much of this work is now being handled by Research for Better Schools, and they are now in the process of developing a variety of new training materials.[4]

Continuing In-Service Study

A major thesis of the IPI approach to instructional change is that any program must be subjected to continuous study and improvement on the basis of performance data. The criterion-referenced nature of the curriculum and tests, the provisions for regular monitoring of pupil progress, the development of written pupil prescriptions, and the extensive record keeping system all contribute to the availability of meaningful feedback data.

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[4]Robert Scanlon and Claire Mosley, "Teacher Education for Individualized Instruction," Paper presented at Fall, 1967 meeting of Pennsylvania Educational Research Association (Philadelphia: Research for Better Schools, Inc.).

In no place is this continuing examination of the performance of the program more crucial than in teacher examination of all elements of the program, including teaching procedures. A basic part of the IPI procedure is to hold regular planning sessions for each team of teachers responsible for a given grade or combination of grades. Here teachers, utilizing a variety of types of available data, discuss with one another and with the principal or supervisor the operation of the system and any special problems that have been encountered. These include the learning problems of individual students, problems in developing prescriptions, problems of materials, procedures or tests, and general problems in effective utilization of the system. These sessions are the heart of the teacher in-service improvement programs. In the early stages of implementation of IPI, the teachers, quite naturally, are most concerned with mastering the mechanics of the system. However, as the teachers become familiar with the mechanics, the planning sessions focus on the use of the system to achieve maximum individualization of instruction. To do this it is necessary for the teachers and administrators to have available, during these meetings, data which bear on pupil performance and progression and which may have implications for improvement in teaching practices and in lesson materials.

One such type of data is a weekly printout or summary of each student's placement at a given time during the week. This report should be cumulative over the entire school year and should serve the following functions: (1) To identify students who are working in the same unit but are assigned to different teachers in the team [This information is often the basis for reassigning these students to one teacher within the team.]; (2) To identify quickly students who may be having difficulty in the program; (3) To identify areas of the curriculum where students in general tend to have difficulty in reaching the proficiency required, suggesting that the materials, instructional techniques, or tests may be faulty or inadequate; (4) To identify specific topics for seminars and group instruction.

Table 2 is one such printout for a group of seven- and eight-year olds assigned to one teacher for instruction. Within this group there are several students who happen to be at the same place during week 18 and have been identified for small group instruction. These are students 7, 8, 9, 10, 12, and 18. Just what instructional techniques the teachers will use with these students is a function of the reason for assemblying the small group. In this case, it was the thinking of the teachers that none of the materials available were adequate for these students.

An examination of this information also reveals that students 6, 7, 8, and 18 have been working in a particular unit for at least six weeks while student 12 has been working for five weeks in C-Addition, and student 14 has been working for four weeks in C-Numeration. During the planning session the administrator or supervisor can use this rate information to generate realistic discussions about individualization and its meaning for specific students. In these discussions other data relevant to the system must be analyzed.

One type of additional data could be that related to the quality of instructional materials for a given objective. An example of data of this type is shown in Table 3. This shows pupil performance on Curriculum Embedded Tests for certain objectives. When students do poorly on these tests and are required to take several before showing mastery of the objective, this is a signal to teachers and other staff that something in the system is not functioning properly. A first hypothesis with respect to objectives 2 and 3 might be that the instructional materials are ineffective. This should be investigated further by having teachers examine the materials and by comparing notes as to what they have observed when pupils are actually studying on these objectives.

Other useful data here could be the type shown in Table 4. This provides some insight into the prescription writing style of different teachers. If other data have shown that pupils working with Teacher C seem to spend a longer time in units than do pupils

of other teachers, the information in Table 4 would suggest that he has a tendency to "overprescribe," to give the student more work than he needs.

It is obvious that none of these data provide, by themselves, specific information as to what is wrong with the system or how teaching practices need to be changed. They do, however, suggest weak points that must be investigated more fully. This type of continuing examination of the operation of the program, particularly with respect to instructional procedures, where this examination is typically based on relevant data is an essential aspect of in-service training and the improvement of instruction.

Summary

Teacher training for work in Individually Prescribed Instruction depends heavily upon an intensive orientation to this specific system and to the theory and rationale underlying it. It can be fully successful only if it involves rather extensive experience in actually working under this system in the classroom. Also, effective operation of an IPI school seems to demand weekly or bi-weekly teacher planning sessions that have as their major functions the further training of teachers and the planning of necessary adaptations in materials, plans, and procedures. It is assumed that, just as the IPI program is one which is subject to continuing study and improvement so the procedures for teacher preparation will also be the target of continuous upgrading.

Table 1. Number of Science Units Mastered by 4th Grade Students on Placement Test and After Two Months of Instruction

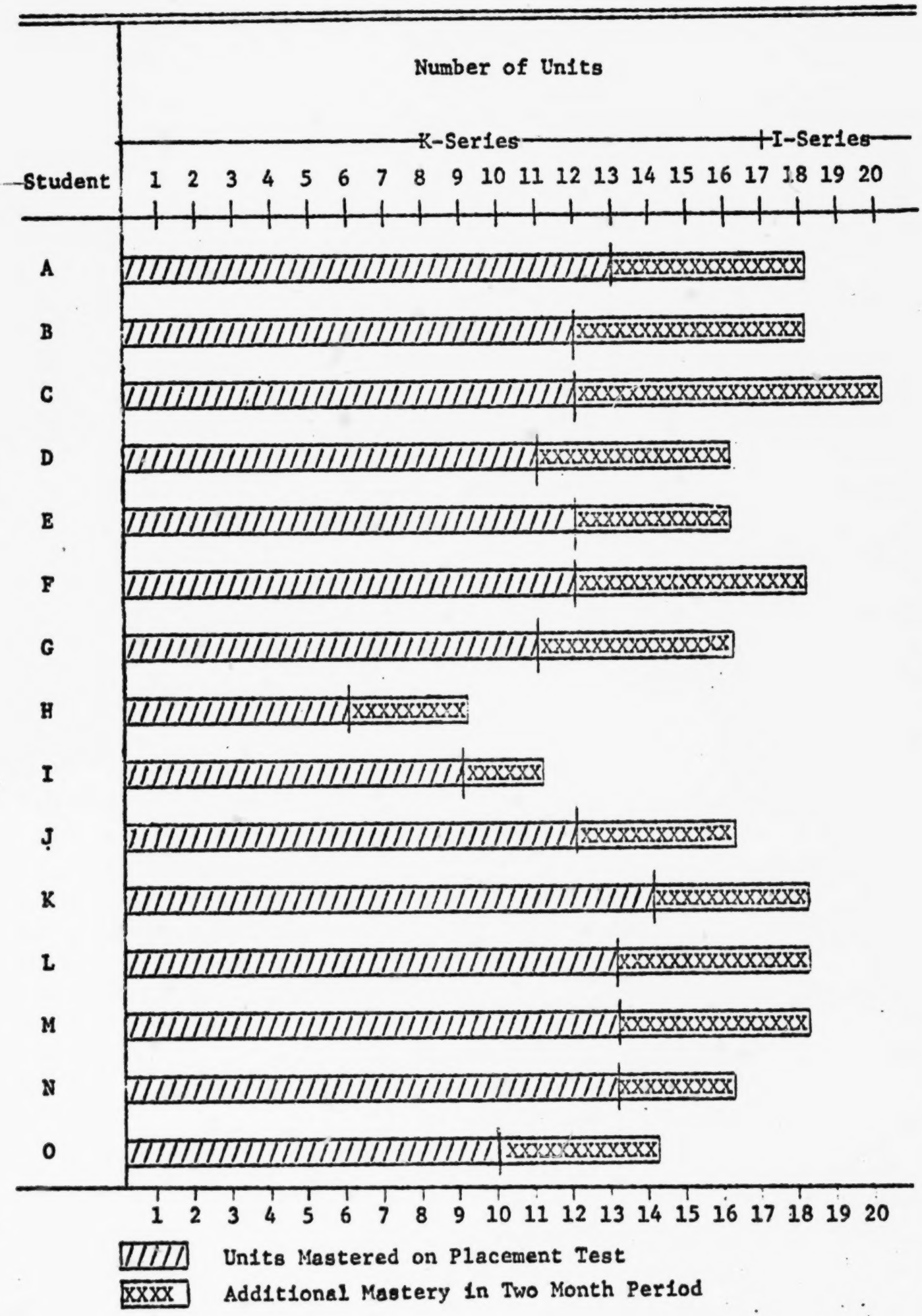

Table 2 - Mathematics Placement, by Objective, for Each Student for Weeks 14 Through 19

Student No. and Initial	Week Number 14	15	16	17	18	19
1 - AA	C-NUM-4	C-NUM-7	C-NUM-Post	C-COP-Pre	C-COP-6	C-COP-6
2 - BE	D-MULT-4	D-MULT-Post-H*	D-DIV-3	D-DIV-3	D-DIV-Post	D-FRAC-2
3 - BC	C-TIME-Post	C-SOM-3	C-TIME-5	D-NUM-1	D-NUM-2	D-NUM-4
4 - BK	B-SOM-2	B-SOM-4	B-NUM-2	C-NUM-3	C-NUM-4	C-NUM-4
5 - CT	C-SUB-2	C-SUB-2	C-SUB-4	C-COP-Pre	C-NUM-Post	C-NUM-5
6 - CG	B-ADD-6	B-ADD-8	B-ADD-9	B-ADD-9	B-ADD-9	B-ADD-9
7 - CJ	C-ADD-1	C-ADD-1	C-ADD-2	C-ADD-2	C-ADD-2	C-ADD-2 (SG)**
8 - CP	C-ADD-Pre	C-ADD-2	C-ADD-1	C-ADD-3	C-ADD-2	C-ADD-2 (SG)**
9 - DC	C-ADD-2	C-ADD-3	C-ADD-4	C-ADD-Post	C-ADD-2	C-ADD-2 (SG)**
10 - FE	C-COP-Post	C-MONEY-Pre	C-GEO-1-H*	C-ADD-2	C-ADD-2	C-ADD-2 (SG)**
11 - GV	C-NUM-7	C-NUM-Post	C-NUM-Post-H*	C-Pla Val-4	C-ADD-1	C-ADD-1
12 - HK	C-Pla Val-5-H*	C-ADD-Pre	C-ADD-1	C-ADD-2	C-Add-2	C-ADD-2 (SG)**
13 - HJ	C-SOM-2-H*	C-COP-5	D-NUM-2	D-NUM-3	D-NUM-3	D-NUM-Post
14 - HR	C-FRAC-3	C-FRAC-Post	C-FRAC-4	C-TIME	C-NUM-5	C-NUM-Post
15 - KC	D-Pla Val-5	D-Pla Val-Post	D-ADD-5	D-ADD-6	D-ADD-6	D-ADD-Post
16 - LD	C-NUM-6	C-NUM-7-H*	C-Pla Val-4	C-SUB-1-H*	C-ADD-Pre	C-ADD-1
17 - MR	B-MONEY-3	B-MONEY-4	B-SOM-4	C-NUM-Pre	C-NUM-1	C-NUM-1
18 - MD	C-ADD-Pre	C-ADD-2	C-ADD-2	C-ADD-2	C-ADD-2	C-ADD-2 (SG)**
...						
25 - MD	C-NUM-3	C-NUM-3	C-NUM-4	C-NUM-4	C-NUM-6	C-NUM-6

* H - Hold

** SG - Small group instruction for a particular objective

Table 3. Number of Students Requiring Indicated Number of CET's Before Showing Mastery of Objective

Objective 1		Objective 2		Objective 3	
No. of CET's Required	No. of Students	No. of CET's Required	No. of Students	No. of CET's Required	No. of Students
1	38	1	2	1	6
2	7	2	13	2	31
		3	16	3	4
		4	5		

Table 4. Number of Pages or Exercises Prescribed by Different Teachers for Pupils Working in One Given Unit and Having Comparable Pretest Scores

Teacher	No. of Pages or Exercises Available	No. of Students	Number of Pages Assigned	
			Mean	Range
A	47	12	23	11-40
B	47	16	27	13-39
C	47	30	38	21-47
D	47	18	21	10-37